INDEX TO AUTHORS

A

ANDERSON, ERNEST C., and PETERSEN, DONALD F. Cell growth and division. II. Experimental studies of cell volume distributions in mammalian suspension cultures, 353

———, ———, and TOBEY, R. A. An effect of cell shape on apparent volume as determined with a Coulter aperture, 975

———. See BELL and ANDERSON, 329

B

BAIRD, S. L., JR. See ISENBERG, ROSENBLUTH, and BAIRD, 365

BARNARD, A. C. L., DUCK, I. M., and LYNN, M. S. The application of electromagnetic theory to electrocardiology. I. Derivation of the integral equations, 443

———, ———, ———, and TIMLAKE, W. P. The application of electromagnetic theory to electrocardiology. II. Numerical solution of the integral equation, 463

———. See LYNN, BARNARD, HOLT, and SHEFFIELD, 925

BELL, GEORGE I., and ANDERSON, ERNEST C. Cell growth and division. I. A mathematical model with applications to cell volume distributions in mammalian suspension cultures, 329

BENDET, IRWIN J., and MAYFIELD, JOHN E. Ultraviolet dichroism of fd bacteriophage, 111

BENNETT, M. R. An analysis of the surface fixed-charge theory of the squid giant axon membrane, 151

BLOCH, RENÉ, SHATKAY, ADAM, and SAROFF, H. A. Fabrication and evaluation of membranes as specific electrodes for calcium ion, 865

BLUMENTHAL, R., CAPLAN, S. R., and KEDEM, O. The coupling of an enzymatic reaction to transmembrane flow of electric current in a synthetic "active transport" system, 735

BRUNER, L. J. The electrical conductance of semipermeable membranes. III. Bipolar flow-symmetric electrolytes, 947

———. On the observation of nonlinear asymptotic membrane conductance relations, 627

C

CALVIN, MELVIN. See ROSS and CALVIN, 595

CAPE, J. A. See GRANT, CAPE, GONSER, TOPOL, and SALTMAN, 651

CAPLAN, S. R. See BLUMENTHAL, CAPLAN, and KEDEM, 735

CARTENSEN, EDWIN L. Passive electrical properties of microorganisms. II. Resistance of the bacterial membrane, 493

COLE, KENNETH S. See SCHWAN and COLE, 977

COULTER, NORMAN A., JR. See KUNZ and COULTER, 25

COWIE, DEAN B., and SZAFRANSKI, P. Thermal chromatography of DNA-DNA reactions, 567

CURRAN, PETER F., TAYLOR, AUBREY E., and SOLOMON, A. K. Tracer diffusion and unidirectional fluxes, 879

D

DAVID, CARL W., HAUKAAS, HARVEY B., KALNINS, JURIS G., and SCHOR, ROBERT. Statistical-mechanical studies of the $\alpha \rightleftarrows \beta$ transformation in keratins. II. The tension-length isotherms, 505

DJORDJEVIC, BOZIDAR, and TOLMACH, L. J. X-ray sensitivity of HeLa S3 cells in the G2 phase: comparison of two methods of synchronization, 77

DUCK, I. M. See BARNARD, DUCK, and LYNN, 443

———. See BARNARD, DUCK, LYNN, and TIMLAKE, 463

E

EDGAR, S. L. See HARTH AND EDGAR, 689

EDMUNDSON, ALLEN B. See SCHIFFER and EDMUNDSON, 121

EISENMAN, GEORGE. See SANDBLOM and EISENMAN, 217

F

FEITELSON, J. Interaction between protein subunits from model studies, 727

FRIEDLANDER, S. K. See SPAETH and FRIEDLANDER, 827

FRITZ, O. G., JR., and SWIFT, T. J. The state of water in polarized and depolarized frog nerves. A proton magnetic resonance study, 675

G

GERSTEIN, GEORGE L. See PERKEL, GERSTEIN, and MOORE, 391, 419

GESELOWITZ, DAVID B. On bioelectric potentials in an inhomogeneous volume conductor, 1

GOLUB, E. I., and NAZARENKO, V. G. Electric birefringence in solutions of high molecular weight ribonucleic acid, 13

GONSER, U. See GRANT, CAPE, GONSER, TOPOL, and SALTMAN, 651
GOVINDJEE. See PAPAGEORGIOU and GOVINDJEE, 375
———. See SZALAY, RABINOWITCH, MURTY, and GOVINDJEE, 137
GRADY, LEO J. See POLLARD and GRADY, 205
GRANT, R. W., CAPE, J. A., GONSER, U., TOPOL, L. E., and SALTMAN, P. Spin states of divalent iron in anhydrohemoglobin, 651
GRAY, PETER R. Conditional probability analyses of the spike activity of single neurons, 759

H

HARRIS, JOSEPH D. See HLADKY and HARRIS, 535
HARTH, E. M., and EDGAR, S. L. Association by synaptic facilitation in highly damped neural nets, 689
HAUKAAS, HARVEY B. See DAVID, HAUKAAS, KALNINS, and SCHOR, 505
HERMANN, HOWARD T., and OLSEN, RICHARD E. Dynamic statistics of crayfish caudal photoreceptors, 279
HLADKY, STEPHEN B., and HARRIS, JOSEPH D. An ion displacement membrane model, 535
HOLT, J. H. See LYNN, BARNARD, HOLT, and SHEFFIELD, 925
HUSTON, D. C., and POLLARD, ERNEST C. DNA degradation in *Escherichia coli* 15T⁻L⁻ induced by fast proton bombardment, 555

I

ISENBERG, I., ROSENBLUTH, R., and BAIRD, S. L., JR. Comparative phosphorescence quenching of DNA's of different composition, 365

K

KALNINS, JURIS G. See DAVID, HAUKAAS, KALNINS, and SCHOR, 505
KEDEM, O. See BLUMENTHAL, CAPLAN, and KEDEM, 735
KUNZ, ALBERT L., and COULTER, NORMAN A., JR. Non-Newtonian behavior of blood in oscillatory flow, 25

L

LAKSHMINARAYANAIAH, N. Permeation of water through cation exchange membranes, 511
LEITNER, FELIX. Kinetics of penicillinase induction and variation of penicillinase translation in *Staphylococcus aureus*, 913
LEVENGOOD, W. C. Morphogenesis as influenced by locally administered magnetic fields, 297
LYNN, M. S., BARNARD, A. C. L., HOLT, J. H., and SHEFFIELD, L. T. A proposed method for the inverse problem in electrocardiology, 925
———. See BARNARD, DUCK, and LYNN, 443
———. See BARNARD, DUCK, LYNN, and TIMLAKE, 463

M

MACEY, ROBERT I., and OLIVER, ROBERT M. The time dependence of single file diffusion, 545
MALING, J. E. See RABINOVITCH, MALING, and WEISSBLUTH, 187, 319
MALKIN, SHMUEL. Theoretical analysis of the enhancement effect in photosynthesis. Evidence for the "spill-over" model, 629
MAURO, ALEXANDER. Shockley-type configurations in ionic systems: consequences of discontinuous dielectric constant in analysis via Poisson-Boltzmann equation, 973
MAY, LEOPOLD. See MCDERMOTT, MAY, and ORLANDO, 615
MAYFIELD, JOHN E. See BENDET and MAYFIELD, 111
MCDERMOTT, PATRICK, MAY, LEOPOLD, and ORLANDO, JOSEPH. A Mössbauer study of ferri- and ferrocytochrome *c*, 615
MCGRATH, R. A., and WILLIAMS, R. W. Interruptions in single strands of the DNA in slime mold and other organisms, 309
MCKAY, DAVID. See MORALES and MCKAY, 621
MELA, M. J. Elastic-mathematical theory of cells and mitochondria in swelling process. I. The membranous stresses and modulus of elasticity of the egg cell of sea urchin, *Strongylocentrotus purpuratus*, 95
MIKULECKY, D. C. On the relative contribution of viscous flow vs. diffusional (frictional) flow to the stationary-state flow of water through a "tight" membrane, 527
MIRSKY, I. Wave propagation in a viscous fluid contained in an orthotropic elastic tube, 165
MOORE, GEORGE P. See PERKEL, GERSTEIN, and MOORE, 391, 419
MORALES, MANUEL, and MCKAY, DAVID. Biochemical oscillations in "controlled" systems, 621
MURTY, N. R. See SZALAY, RABINOWITCH, MURTY, and GOVINDJEE, 137
MYHILL, J. Investigation of the effect of data error in the analysis of biological tracer data, 903

N

NAZARENKO, V. G. See GOLUB and NAZARENKO, 13
NOONEY, GROVE C. Age distributions in dividing populations, 69

O

OLIVER, ROBERT M. See MACEY and OLIVER, 545
OLSEN, RICHARD E. See HERMANN and OLSEN, 279
ORLANDO, JOSEPH. See MCDERMOTT, MAY, and ORLANDO, 615

P

PAPAGEORGIOU, GEORGE, and GOVINDJEE. Changes in intensity and spectral distribution of fluorescence. Effect of light treatment on normal and DCMU-poisoned *Anacystis nidulans*, 375

PARTRIDGE, LLOYD D. Intrinsic feedback factors producing inertial compensation in muscle, 853

PERKEL, DONALD H., GERSTEIN, GEORGE L., and MOORE, GEORGE P. Neuronal spike trains and stochastic point processes. I. The single spike train, 391

———, ———, and ———. II. Simultaneous spike trains, 419

PETERSEN, DONALD F. See ANDERSON AND PETERSEN, 353

———. See ANDERSON, PETERSEN, and TOBEY, 975

POLLARD, ERNEST C., and GRADY, LEO J. CsCl density gradient centrifugation studies of intact bacterial cells, 205

———. See HUSTON and POLLARD, 555

PROTHERO, JOHN W., and ROCKAFELLER, R. T. A model of cell cleavage, 659

R

RABINOVITCH, B., MALING, J. E., and WEISSBLUTH, M. Enzyme-substrate reactions in very high magnetic fields. I, 187

———, ———, and ———. II, 319

RABINOWITCH, E. See SZALAY, RABINOWITCH, MURTY, and GOVINDJEE, 137

ROCKAFELLER, R. T. See PROTHERO and ROCKAFELLER, 659

ROSENBLUTH, R. See ISENBERG, ROSENBLUTH, and BAIRD, 365

ROSS, ROBERT T., and CALVIN, MELVIN. Thermodynamics of light emission and free-energy storage in photosynthesis, 595

S

SALTMAN, P. See GRANT, CAPE, GONSER, TOPOL, and SALTMAN, 651

SANDBLOM, JOHN P. A method to relate steady-state ionic currents, conductances, and membrane potential in ion exchange membranes with unknown thermodynamic properties, 243

——— and EISENMAN, GEORGE. Membrane potentials at zero current. The significance of a constant ionic permeability ratio, 217

SAROFF, H. A. See BLOCH, SHATKAY, and SAROFF, 865

SCHIFFER, MARIANNE, and EDMUNDSON, ALLEN B. Use of helical wheels to represent the structures of proteins and to identify segments with helical potential, 121

SCHOR, ROBERT. See DAVID, HAUKAAS, KALNINS, and SCHOR, 505

SCHWAN, HERMAN, and COLE, KENNETH S. Samuel A. Talbot, 1903–1967, 977

SHATKAY, ADAM. See BLOCH, SHATKAY, and SAROFF, 865

SHEFFIELD, L. T. See LYNN, BARNARD, HOLT, and SHEFFIELD, 925

SINSHEIMER, ROBERT L. See YARUS and SINSHEIMER, 267

SOLOMON, A. K. See CURRAN, TAYLOR, and SOLOMON, 879

SPAETH, E. E., and FRIEDLANDER, S. K. The diffusion of oxygen, carbon dioxide, and inert gas in flowing blood, 827

STEIN, RICHARD B. The information capacity of nerve cells using a frequency code, 797

———. Some models of neuronal variability, 37

SWIFT, T. J. See FRITZ and SWIFT, 675

SZAFRANSKI, P. See COWIE and SZAFRANSKI, 567

SZALAY, L., RABINOWITCH, E., MURTY, N. R., and GOVINDJEE. Relationship between the absorption and emission spectra and the "red drop" in the action spectra of fluorescence in vivo, 137

T

TAYLOR, AUBREY E. See CURRAN, TAYLOR, and SOLOMON, 879

TIMLAKE, W. P. See BARNARD, DUCK, LYNN, and TIMLAKE, 463

TOBEY, R. A. See ANDERSON, PETERSEN, and TOBEY, 975

TOLMACH, L. J. See DJORDJEVIC and TOLMACH, 77

———. See WEISS and TOLMACH, 779

TOPOL, L. E. See GRANT, CAPE, GONSER, TOPOL, and SALTMAN, 651

V

VAIDHYANATHAN, V. S. The electrical conductance of semipermeable membranes, 974

W

WEISS, BARBARA G., and TOLMACH, L. J. Modification of x-ray–induced killing of HeLa S3 cells by inhibitors of DNA synthesis, 779

WEISSBLUTH, M. See RABINOVITCH, MALING, and WEISSBLUTH, 187, 319

WILLIAMS, R. W. See MCGRATH and WILLIAMS, 309

WILSON, THEODORE A. A theoretical prediction of the normal cardiac oxygen consumption, 585

WINKLER, MARVIN H. Some notes on fluorescence intensity, 719

Y

YARUS, MICHAEL, and SINSHEIMER, ROBERT L. Ultraviolet sensitivity of the biological activity of ΦX174 virus, single-stranded DNA, and RF DNA, 267

INDEX TO SUBJECTS

A

Absorption and emission spectra and "red drop" in action spectra of fluorescence in vivo, relationship, 137
Acid, deoxyribonucleic, degradation in *Escherichia coli* 15T⁻L⁻ induced by fast proton bombardment, 555
———, deoxyribonucleic, –DNA reactions, thermal chromatography of, 567
———, deoxyribonucleic, in slime mold and other organisms, interruptions in single strands of, 309
———, deoxyribonucleic, single-stranded, ΦX174 virus, and RF DNA, ultraviolet sensitivity of biological activity of, 267
———, deoxyribonucleic, synthesis, modification of X-ray–induced killing of HeLa S3 cells by inhibitors of, 779
———, ribonucleic, electric birefringence in solutions of high molecular weight, 13
Acids, deoxyribonucleic, of different composition, comparative phosphorescence quenching of, 365
Age distributions in dividing populations, 69
Anacystis nidulans, normal and 1,1-dimethyl-3 (3′4′-dichloro-)phenyl urea–poisoned, effect of light treatment on, 375
Anhydrohemoglobin, spin states of divalent iron in, 651
Axon membrane, giant squid, surface fixed-charge theory of, 151

B

Bacterial cells, intact, CsCl density gradient centrifugation studies of, 205
——— membrane, resistance of, passive electrical properties of microorganisms, 493
Bacteriophage, fd, ultraviolet dichroism of, 111
Biochemical oscillations in "controlled" systems, 621
Bioelectric potentials in inhomogeneous volume conductor, 1
Biological activity of ΦX174 virus, single-stranded DNA, and RF DNA, ultraviolet sensitivity of, 267
——— tracer data, investigation of effect of data error in analysis of, 903
Birefringence, electric, in solutions of high molecular weight ribonucleic acid, 13
Blood, flowing, diffusion of oxygen, carbon dioxide, and inert gas in, 827
———, non-Newtonian behavior of, in oscillatory flow, 25

C

Calcium ions, fabrication and evaluation of membranes as specific electrodes for, 865
Carbon dioxide, oxygen, and inert gas in flowing blood, diffusion of, 827
Cardiac oxygen consumption, normal, theoretical prediction, 585
Cation exchange membranes, permeation of water through, 511
Cell cleavage, model of, 659
——— growth and division, 329, 353
——— shape effect on apparent volume as determined with Coulter aperture 975
——— volume distributions in mammalian suspension cultures, 353
——— volume distributions in mammalian suspension cultures, mathematical model with applications to, 329
Cells, HeLa S3, in G2 phase, X-ray sensitivity of, 77
———, HeLa S3, modification of X-ray–induced killing of, by inhibitors of DNA, 779
———, intact bacterial, CsCl density gradient centrifugation studies of, 205
——— and mitochondria in swelling process, elastic-mathematical theory of, 95
———, nerve, information capacity of, using frequency code, 797
Centrifugation studies of intact bacterial cells, CsCl density gradient, 205
Cesium chloride density gradient centrifugation studies of intact bacterial cells, 205
Charge theory, surface-fixed, theory of squid giant axon membrane, analysis of, 151
Chromatography, thermal, of DNA-DNA reactions, 567
Conductance, electrical, of semipermeable membranes, 974
———, electrical, of semipermeable membranes, bipolar flow-symmetric electrolytes, 947
——— relations, nonlinear asymptotic membrane, observation of, 627
Conductances, steady-state ionic currents, and membrane potential in ion exchange membranes with unknown thermodynamic properties, 243
Conductor, inhomogeneous volume, bioelectric potentials in, 1
Crayfish caudal photoreceptors, dynamic statistics of, 279
Cultures, mammalian suspension, experimental studies of cell volume distributions in, 353
———, mammalian suspension, mathematical

model with applications to cell volume distributions in, 329
Current, electric, in synthetic "active transport" system, coupling of enzymatic reaction to transmembrane flow of, 735
———, zero, membrane potentials at, 217
Currents, steady-state ionic, conductances, and membrane potential in ion exchange membranes with unknown thermodynamic properties, 243
Cytochrome *c*, ferri- and ferro-, Mössbauer study, 615

D

Density gradient, CsCl, centrifugation studies of intact bacterial cells, 205
Deoxyribonucleic acid degradation in *Escherichia coli* 15T⁻L⁻ induced by fast proton bombardment, 555
——— acid-DNA reactions, thermal chromatography of, 567
——— acid in slime mold and other organisms, interruptions in single strands of, 309
——— acid, single-stranded, ΦX174 virus, and RF DNA, ultraviolet sensitivity of biological activity of, 267
——— acid synthesis, modification of X-ray–induced killing of HeLa S3 cells by inhibitors of, 779
——— acids of different composition, comparative phosphorescence quenching of, 365
Dichroism, ultraviolet, of fd bacteriophage, 111
Diffusion of oxygen, carbon dioxide, and inert gas in flowing blood, 827
———, single file, time dependence of, 545
———, tracer, and unidirectional fluxes, 879
Diffusional (frictional) flow vs. viscous flow, contribution to stationary state flow of water through "tight" membrane, 527
1,1 - Dimethyl - 3(3′4′ - dichloro-)phenyl urea–poisoned and normal *Anacystis nidulans*, effect of light treatment on, 375

E

Egg cell of sea urchin, *Strongylocentrotus purpuratus*, membranous stresses and modulus of elasticity of, 95
Elastic tube, orthotropic, wave propagation in viscous fluid contained in, 165
Elasticity, membranous stresses and modulus of, in egg cell of sea urchin, *Strongylocentrotus purpuratus*, 95
Elastic-mathematical theory of cells and mitochondria in swelling process, 95
Electric birefringence in solutions of high molecular weight ribonucleic acid, 13
——— current in synthetic "active transport" system, coupling of enzymatic reaction to transmembrane flow of, 735
Electrical conductance of semipermeable membranes, 974
——— conductance of semipermeable membranes, bipolar flow-symmetric electrolytes, 947
——— properties, passive, of microorganisms, resistance of bacterial membrane, 493
Electrocardiology, application of electromagnetic theory to, derivation of integral equations, 443
———, application of electromagnetic theory to, numerical solution of integral equations, 463
———, proposed method for inverse problem in, 925
Electrodes, specific, for calcium ions, fabrication and evaluation of membranes as, 865
Electrolytes, bipolar flow-symmetric, in electrical conductance of semipermeable membranes, 947
Electromagnetic theory, application to electrocardiology, derivation of integral equations, 443
——— theory, application to electrocardiology, numerical solution of integral equations, 463
Energy, free, storage in photosynthesis, thermodynamics of light emission and, 595
Enzymatic reaction to transmembrane flow of electric current in synthetic "active transport" system, coupling of, 735
Enzyme-substrate reactions in high magnetic fields, 187, 319
Equations, integral, derivation of, in application of electromagnetic theory to electrocardiology, 443
———, integral, numerical solution of, in application of electromagnetic theory to electrocardiology, 463
Escherichia coli 15T⁻L⁻, DNA degradation induced by fast proton bombardment, 555
Exchange membranes, cation, permeation of water through, 511
——— membranes, ion, with unknown thermodynamic properties, relation to steady-state ionic currents, conductances, and membrane potential in, 243

F

Feedback factors, intrinsic, producing inertial compensation in muscle, 853
Ferri- and ferrocytochrome *c*, Mössbauer study, 615
Ferro- and ferricytochrome *c*, Mössbauer study, 615
Fields, high magnetic, enzyme-substrate reactions in, 187, 319
———, locally administered, influence on morphogenesis, 297
Flow, oscillatory, non-Newtonian behavior of blood in, 25
———, transmembrane, of electric current in

synthetic "active transport" system, coupling of enzymatic reaction to, 735
Flow, viscous vs. diffusional (frictional) flow, contribution to stationary-state flow of water through "tight" membrane, 527
Flow-symmetric electrolytes, bipolar, in electrical conductance of semipermeable membranes, 947
Fluid, viscous, contained in orthotropic tube, wave propagation in, 165
Fluorescence in vivo, relationship between absorption and emission spectra and "red drop" in action spectra of, 137
——— intensity, 719
———, spectral distribution of, and intensity, changes in, 375
Frictional (diffusional) flow vs. viscous flow, contribution to stationary-state flow of water through "tight" membrane, 527
Frog nerves, polarized and depolarized, state of water in, 675

G

Gas, inert, oxygen, and carbon dioxide in flowing blood, diffusion of, 827

H

HeLa S3 cells, X-ray–induced killing of, by inhibitors of DNA synthesis, 779
Helical wheels, use of to represent structures of proteins and to identify segments with helical potential, 121

I

Ion displacement membrane model, 535
Ionic currents, steady-state, conductances, and membrane potential in ion exchange membranes with unknown thermodynamic properties, 243
——— permeability ratio, constant, membrane potentials at zero current, 217
Ions, calcium, fabrication and evaluation of membranes as specific electrodes for, 865
Iron, divalent, in anhydrohemoglobin, spin states of, 651
Isotherms, tension-length, in statistical-mechanical studies of $\alpha \rightleftarrows \beta$ transformation in keratins, 505

K

Keratins, statistical-mechanical studies of $\alpha \rightleftarrows \beta$ transformation in, tension-length isotherms, 505
Kinetics of penicillinase induction and variation of penicillinase translation in *Staphylococcus aureus*, 913

L

Letters to the Editor, 627, 973, 974, 975, 977
Light emission and free-energy storage in photosynthesis, thermodynamics, 595
——— treatment on normal and 1,1-dimethyl-3(3′4′-dichloro-)phenyl urea–poisoned *Anacystis nidulans*, effect of, 375

M

Magnetic fields, high, enzyme-substrate reactions in, 187, 319
——— fields, locally administered, influence on morphogenesis, 297
——— resonance, proton, and state of water in polarized and depolarized frog nerves, 675
Mammalian suspension cultures, cell volume distributions in, 353
——— suspension cultures, mathematical model with applications to cell volume distributions in, 329
Mathematical model with applications to cell volume distributions in mammalian suspension cultures, 329
Mathematical-elastic theory of cells and mitochondria in swelling process, 95
Mechanical-statistical studies of $\alpha \rightleftarrows \beta$ transformation in keratins, tension-length isotherms, 505
Membrane, bacterial, resistance of, passive electrical properties of microorganisms, 493
——— conductance relations, nonlinear asymptotic, observation of, 627
——— model, ion displacement, 535
——— potential, steady-state ionic currents, and conductances in ion exchange membranes with unknown thermodynamic properties, 243
——— potentials at zero current, 217
———, squid giant axon, analysis of surface fixed-charge theory of, 151
———, "tight," contribution of viscous flow vs. diffusional (frictional) flow to stationary-state flow of water through, 527
———, transmembrane flow of electric current in synthetic "active transport" system, coupling of enzymatic reaction to, 735
Membranes as specific electrodes for calcium ions, fabrication and evaluation of, 865
———, cation exchange, permeation of water through, 511
———, semipermeable, electrical conductance of, 974
———, semipermeable, electrical conductance of, bipolar flow-symmetric electrolytes, 947
Microorganisms, passive electrical properties of, resistance of bacterial membrane, 493
Mitochondria and cells in swelling process, elastic-mathematical theory of, 95
Model, ion displacement membrane, 535
———, mathematical, with applications to cell volume distributions in mammalian suspension cultures, 329
——— of cell cleavage, 659

Model, "spill-over," evidence for, in theoretical analysis of enhancement effect in photosynthesis, 629
——— studies, interaction between protein subunits, 727
Models of neuronal variability, 37
Mössbauer study of ferri- and ferrocytochrome *c*, 615
Mold, slime, and other organisms, interruptions in single strands of DNA in, 309
Molecular weight, high, electric birefringence in solutions of ribonucleic acid, 13
Morphogenesis influenced by locally administered magnetic fields, 297
Muscle, intrinsic feedback factors producing inertial compensation in, 853

N

Nerve cells using frequency code, information capacity of, 797
Nerves, polarized and depolarized frog, state of water in, 675
Neural nets, highly damped, association by synaptic facilitation in, 689
Neuronal simultaneous spike trains and stochastic point processes, 419
——— single spike train and stochastic point processes, 391
——— variability, models, 37
Neurons, single, conditional probability analyses of spike activity of, 759
Newtonian, non-, behavior of blood in oscillatory flow, 25
Nucleic acid, deoxyribo-, degradation in *Escherichia coli* 15T⁻L⁻ induced by fast proton bombardment, 555
——— acid, deoxyribo-, –DNA reactions, thermal chromatography of, 567
——— acid, deoxyribo-, in slime mold and other organisms, interruptions in single strands of, 309
——— acid, deoxyribo-, single-stranded, ΦX174 virus, and RF DNA, ultraviolet sensitivity of biological activity of, 267
——— acid, deoxyribo-, synthesis, modification of X-ray–induced killing of HeLa S3 cells by inhibitors of, 779
——— acids, deoxyribo-, of different composition, comparative phosphorescence quenching of, 365

O

Oscillations, biochemical, in "controlled" systems, 621
Oscillatory flow, non-Newtonian behavior of blood in, 25
Oxygen, carbon dioxide, and inert gas in flowing blood, diffusion of, 827
——— consumption, normal cardiac, theoretical prediction, 585

P

Penicillinase induction and variation of penicillinase translation in *Staphylococcus aureus*, kinetics of, 913
Permeability ratio, constant ionic, membrane potentials at zero current, 217
Permeable, semi-, membranes, electrical conductance of, 974
———, semi-, membranes, electrical conductance of, and bipolar flow-symmetric electrolytes, 947
Permeation of water through cation exchange membranes, 511
Phosphorescence quenching, comparative, of DNA's of different composition, 365
Photoreceptors, crayfish caudal, dynamic statistics of, 279
Photosynthesis, theoretical analysis of enhancement effect in, and evidence for "spill-over" model, 629
———, thermodynamics of light emission and free-energy storage in, 595
Populations, dividing, age distributions in, 69
Potential, helical, use of helical wheels to represent structures of proteins and to identify segments with, 121
———, membrane, steady-state ionic currents, and conductances in ion exchange membranes with unknown thermodynamic properties, 243
Potentials, bioelectric, in inhomogeneous volume conductor, 1
———, membrane, at zero current, 217
Protein subunits from model studies, interaction between, 727
Proteins, use of helical wheels to represent structures of and to identify segments with helical potential, 121
Proton bombardment, fast, DNA degradation in *Escherichia coli* 15T⁻L⁻ induced by, 555
——— magnetic resonance and state of water in polarized and depolarized frog nerves, 675

R

Resistance of bacterial membrane, passive electrical properties of microorganisms, 493
Resonance, proton magnetic, and state of water in polarized and depolarized frog nerves, 675
Ribonucleic acid, deoxy-, degradation in *Escherichia coli* 15T⁻L⁻ induced by fast proton bombardment, 555
——— acid, deoxy-, –DNA reactions, thermal chromatography of, 567
——— acid, deoxy-, in slime mold and other organisms, interruptions in single strands of, 309
——— acid, deoxy-, single-stranded, ΦX174 virus, and RF DNA, ultraviolet sensitivity of biological activity of, 267

Ribonucleic acid, deoxy-, synthesis, modification of X-ray–induced killing of HeLa S3 cells by inhibitors of, 779
——— acid, electric birefringence in solutions of high molecular weight, 13
——— acids, deoxy-, of different composition, comparative phosphorescence quenching of, 365
Roentgen ray sensitivity of HeLa S3 cells in G2 phase, 77
——— ray–induced killing of HeLa S3 cells by inhibitors of DNA synthesis, 779

S

Sea urchin, *Strongylocentrotus purpuratus*, membranous stresses and modulus of elasticity of egg cell of, 95
Sensitivity, ultraviolet, of biological activity of ΦX174 virus, single-stranded DNA, and RF DNA, 267
Short Communications, 621
Solutions, high molecular weight ribonucleic acid, electric birefringence in, 13
Spectra, absorption and emission, and "red drop" in action spectra of fluorescence in vivo, relationship between, 137
Spectral distribution of fluorescence and intensity changes in, 375
Spike activity of single neurons, conditional probability analyses of, 759
——— trains, simultaneous neuronal, and stochastic point processes, 419
——— trains, single neuronal, and stochastic point processs, 391
Spin states of divalent iron in anhydrohemoglobin, 651
Squid giant axon membrane, surface fixed-charge theory of, 151
Staphylococcus aureus, kinetics of penicillinase induction and variation of penicillinase translation in, 913
Stationary-state flow of water through "tight" membrane, contribution of viscous flow vs. diffusional (frictional) flow to, 527
Statistical-mechanical studies of $\alpha \rightleftarrows \beta$ transformation in keratins, tension-length isotherms, 505
Steady-state ionic currents, conductances, and membrane potential in ion exchange membranes with unknown thermodynamic properties, 243
Stochastic point processes and neuronal single spike trains, 391
——— point processes and simultaneous neuronal spike trains, 419
Strongylocentrotus purpuratus, membranous stresses and modulus of elasticity of egg cell of, 95
Synaptic facilitation in highly damped neural nets, association by, 689

T

Talbot, Samuel A., 1903–1967, 977
Thermal chromatography of DNA-DNA reactions, 567
Thermodynamic properties, unknown, relation to steady-state ionic currents, conductances, and membrane potential in ion exchange membranes, 243
Thermodynamics of light emission and free-energy storage in photosynthesis, 595
Time dependence of single file diffusion, 545
Tracer data, biological, investigation of effect of data error in analysis of, 903
——— diffusion and unidirectional fluxes, 879
Transformation, $\alpha \rightleftarrows \beta$ in keratins, statistical-mechanical studies of, tension-length isotherms, 505

U

Ultraviolet dichroism of fd bacteriophage, 111
——— sensitivity of biological activity of ΦX174 virus, single-stranded DNA, and RF DNA, 267
Urea, 1,1 - dimethyl - 3(3′4′ - dichloro-)phenyl-, effect of light treatment on *Anacystis nidulans* poisoned by, 375

V

Virus, ΦX174, single-stranded DNA, and RF DNA, ultraviolet sensitivity of biological activity of, 267
Viscous flow vs. diffusional (frictional) flow, contribution to stationary-state flow of water through "tight" membrane, 527
——— fluid contained in orthotropic elastic tube, wave propagation in, 165

W

Water in polarized and depolarized frog nerves, state of, 675
——— permeation through cation exchange membranes, 511
——— through "tight" membrane, contribution of viscous flow vs. diffusional (frictional) flow to stationary-state flow of, 527
Wave propagation in viscous fluid contained in orthotropic elastic tube, 165

X

X-ray. *See* Roentgen ray.